

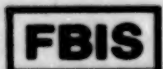
JPRS 74305

3 October 1979

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 12



FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available from Bell & Howell, Old Mansfield Road, Wooster, Ohio 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

REPORT DOCUMENTATION PAGE		1. REPORT NO. JPRS 74305	2.	3. Recipient's Accession No.
4. Title and Subtitle WORLDWIDE REPORT: NUCLEAR DEVELOPMENT AND PROLIFERATION, No. 12			5. Report Date 3 October 1979	
7. Author(s)			6.	
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			8. Performing Organization Rept. No.	
12. Sponsoring Organization Name and Address As above			10. Project/Task/Work Unit No.	
			11. Contract(C) or Grant(G) No. (C) (G)	
			13. Type of Report & Period Covered	
			14.	
15. Supplementary Notes				
16. Abstract (Limit: 200 words) This serial report contains worldwide press and radio coverage of nuclear research programs; technical indicators of nuclear capabilities; production capability; construction and purchase of nuclear facilities; status of uranium and thorium supplies; level of technology in high explosives and advanced munitions; government and nongovernment attitudes on nuclear-related topics; international agreements for nuclear cooperation; transfer of technology; personalities, organizations, equipment and facilities.				
17. Document Analysis a. Descriptors WORLDWIDE Nuclear Proliferation Nuclear Development Uranium Thorium Technology b. Identifiers/Open-Ended Terms c. COSATI Field/Group 18				
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22161		19. Security Class (This Report) UNCLASSIFIED		21. No. of Pages 48
		20. Security Class (This Page) UNCLASSIFIED		22. Price

3 October 1979

WORLDWIDE REPORT
NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 12

CONTENTS

PAGE

ASIA

PHILIPPINES

Work Suspended on Nuclear Powerplant (BUSINESS TIMES, 7, 15 Aug 79).....	1
Work 20 Percent Completed, by Marilyn Odchimar Possibility of Contract Termination	

LATIN AMERICA

ARGENTINA

Symposium on Uranium Techniques Set for October 1-4 (LA OPINION, 16 Aug 79).....	3
FRG Firm To Build Heavy Water Reactor Atucha II (DER SPIEGEL, 3 Sep 79).....	4
Offers, Interest in Atucha II Surveyed (Various sources, various dates).....	7
Detailed Report on Offers British Interest	
Cordoba Enterprise Wins Bid To Extract Uranium (LA NACION, 16 Aug 79).....	15
Heavy Water Cargo Arrives From Canada (CONVICCION, 17 Aug 79).....	17

CONTENTS (Continued)	Page
Briefs	
Position on Nuclear Energy	18
SUB-SAHARAN AFRICA	
NAMIBIA	
Briefs	
Roessing, Largest Uranium Deposit	19
SOUTH AFRICA	
New Accurate Uranium Detection Method Discovered (DIE BURGER, 28 Aug 79).....	20
WEST EUROPE	
BELGIUM	
Belgians Polled on Nuclear Powerplants (LE SOIR, 1 Sep 79).....	22
Personal Comfort Preferred Tihange Strike Continues	
FEDERAL REPUBLIC OF GERMANY	
Social Democratic Party Commission Favors Nuclear Power (DIE WELT, 23 Aug 79).....	26
FINLAND	
Antinuclear Movement Has Little Support From Left (Tor Hognas; DAGENS NYHETER, 1 Sep 79).....	28
Pipe Rupture Shuts Down Olkiluoto Nuclear Powerplant (HELSINGIN SANOMAT, 31 Aug, 2 Sep 79).....	32
Poor Quality Pipe Suspected Expert Says Equipment Misused	
Leak Delays Fueling of Olkiluoto Reactor (HELSINGIN SANOMAT, 15 Aug 79).....	38

CONTENTS (Continued)

Page

Operation of Second Loviisa Reactor Encounters Further Delays (HELSINGIN SANOMAT, 13 Aug 79).....	40
---	----

FRANCE

Nuclear Mishaps at Mururoa Described (Thannmar von Muenchhausen; FRANKFURTER ALLGEMEINE, 16 Aug 79).....	43
--	----

WORK SUSPENDED ON NUCLEAR POWERPLANT

Work 20 Percent Completed

Kuala Lumpur BUSINESS TIMES in English 7 Aug 79 p 17

[Article by Marilyn Odchimar]

[Text]

IT WAS just a quiet fishing town before work started on the nuclear power plant. Now the fish have disappeared and the still-unfinished project is the centre of a national controversy.

"The fish, they moved away two years ago when workers began construction on the plant," 18-year-old villager Teodora Santos said. "Fishermen no longer have any catch here. Now they have to go farther out to sea to find fish."

Westinghouse Electric is building the US\$1.1 billion plant for the Philippines government in the economically backward town of Morong on the World War II battle-ground of Bataan peninsula.

Last month, President Ferdinand Marcos suspended work on the plant because of his fear of a repetition of the Three Mile Island accident near Harrisburg, Pa.

He threatened to scrap the project altogether unless assured by Westinghouse that the plant will not imperil Morong's 10,000 fishermen and farmers and other nearby towns.

A three-member panel was appointed to determine whether adequate safeguards have been taken to avoid a repeat of the Three Mile Island incident. Westinghouse officials say there is only a "remote possibility" of such an accident and hope to resume construction shortly.

But fears over the Morong plant do not stem from the Harrisburg accident alone. The plant also lies between two sleeping volcanoes only 12 miles from an earthquake fault.

Despite Westinghouse assurances that the plant can withstand a 7.9 Richter scale earthquake and survive the direct impact of a combat plane or a jumbo jetliner, fears of an accident from human error remain.

Morong town councillor Jun Mendoza summed up this fear.

"We don't believe in our Filipino experts," he said. "We're not saying this to belittle our countrymen, but look at those Americans who are already well advanced in their technology. They still had this Harrisburg accident. What more a poor country like ours."

Morong has reason to lament the disappearance of its fish for the town has been the "fish centre" of the peninsula whose fishing industry accounts for two-thirds of the municipal income.

Fishermen said the fish exodus started in 1977 when American and Filipino teams began levelling a 195-foot-high mountain of coconut trees and rice fields where the plant was to be erected.

On its place, a huge cylindrical building to house a pressurised water reactor now towers over the town.

The building is leak-tight to prevent

initial dispersion of radioactive materials to surrounding environs which include the Subic Bay navy base, 7th Fleet repair yard, 19 miles away.

Twenty per cent of the work, including a foundation of massive interlacing steel beams, has been completed.

The fish disappeared when earth from the levelled mountain were dropped into the sea and streams. Oil spills from workers trucks completed the pollution job.

"Now we have to go to Subic to fish," a fisherman said. "Before, we needed only a gallon of fuel for our boats to catch 100 fish; today, we need three gallons and we catch only 30 or 50, with luck."

Morong residents fear the fish won't return because of the hot waste water which the plant will discharge at the rate of 800,000 gallons daily when it becomes operational.

They are also concerned where and how the nuclear waste from spent uranium fuel will be disposed of.

Plant experts say the hot water discharge will be tolerable for aquatic life. As for low-grade wastes, they will be mixed with cement and kept in 55-gallon steel drums for 10 years until burial sites are found.

Criticism against the project snowballed after Mr Marcos last month ordered public hearings on the plant's safety. Main fire came former Senator

Lorenzo Tanada, a leading opponent of Mr Marcos' martial law regime.

One criticism is that buying a nuclear reactor would worsen Philippine dependence on the United States and other Western countries.

Besides depending on the US Export-Import Bank and other foreign lenders for the project's financing of US\$800 million, the government also has to depend on foreign sources for maintenance work, spare parts and uranium fuel.

Already saddled with a US\$8 billion foreign debt, the Philippines, critics argue, will be further at the mercy of foreign countries — a situation that reflects the development dilemma haunting the Third World.

The project has been marred by with controversy from the start. Two years ago, a near-scandal broke out when the US media claimed Westinghouse clinched the nuclear deal by paying huge commission fees to a "crony" of Mr Marcos. The furor died when Westinghouse said there was nothing improper in the deal.

Even without the controversies, construction is falling nearly a year behind schedule. Government sources said further delay is ahead because of the refusal of the US Nuclear Regulatory Commission to issue Westinghouse an export licence for the plant. — UPI

Possibility of Contract Termination

Kuala Lumpur BUSINESS TIMES in English 15 Aug 79 p 18

[Text]

MANILA, Aug. 14

PRESIDENT Ferdinand Marcos has ordered the termination of Westinghouse International's contract to build the Philippines' first nuclear power plant if it cannot secure an export licence for its equipment.

The *Daily Express* said he had given the order to the Energy Minister, the Solicitor-General and the president of the state-owned National Power Corporation (NPC).

Mr Marcos' letter said the failure to secure a licence from the US Nuclear Regulatory Commission (NRC) "places in serious doubt Westinghouse's ability to perform its obligations" under a contract to build a US\$1,200 million plant in nearby Bataan province.

Westinghouse officials said last week a

legal suit had been filed against the NRC, though the NRC staff had recommended issuing one.

Mr Marcos had suspended work on the project after Opposition leaders questioned its safety, but Westinghouse officials had since said the plant is safe.

However, his letter told the three officials to "evaluate the situation — independent of the safety issue — and, if warranted, to terminate the contract."

The Philippines Cities Services Consortium has brought its fifth offshore well into production this week, bringing the country's daily output to over 40,000 barrels daily, the Energy Ministry said today.

This represents just under one sixth of the country's daily oil needs. — Reuter

ARGENTINA

SYMPOSIUM ON URANIUM TECHNIQUES SET FOR OCTOBER 1-4

Buenos Aires LA OPINION in Spanish 16 Aug 79 p 14

[Text] The International Atomic Energy Organization (OIEA) and the National Energy Commission (CNEA) have planned an international symposium, to be held in Buenos Aires, concerning techniques on the evaluation and mining of uranium. The symposium will take place 1 through 4 October of this year.

The symposium will provide a forum for the presentation and discussion of first hand experiences related to the many aspects of uranium prospecting, with special attention being given to the mining of uranium-bearing minerals.

This will permit both Argentine and foreign specialists to adequately formulate nuclear programs for their respective countries, a process which requires their knowing the amount, location, availability and extraction costs of uranium deposits.

The following principal topics will be discussed and developed: world supply and demand for uranium, normalization of definitions and terminology, physical exploration and description of mineral reserves, mining or other methods of recuperation, estimation of undiscovered uranium reserves, and availability of reserves and resources.

Once lectures and discussion topics are finalized, participants will have the opportunity to tour the country's interior and visit the uranium deposits at Los Gigantes, in the Province of Cordoba, and at Sierra Pintada, in the Province of Mendoza.

A select group of Argentine and foreign experts have now formalized their intended assistance, and will meet in the Santa Maria room of the Buen Aire, guests of the Bank of the City of Buenos Aires.

Professionals interested in the subject can receive more detailed information from the Office of Nuclear Supplies, Exploration Management, of the National Atomic Energy Commission, Avenida del Libertador 8250, Buenos Aires.

9077

CSO: 5100

FRG FIRM TO BUILD HEAVY WATER REACTOR ATUCHA II

Hamburg DER SPIEGEL in German 3 Sep 79 pp 57, 60

[Text] On Wednesday of last week in the Argentinian capital of Buenos Aires, Economics Minister Otto Count Lambsdorff gave the ambassadors of the European Community nations an in-depth report on his 3-week trip through South America.

When the German had finished his speech, the British ambassador began to speak. The Englishman inquired mistrustfully whether--after the atomic deal with Brazil--the Germans now wished to aid the Argentinian military to attain a highly advanced atomic fuel cycle.

Lambsdorff pacified the questioner. The Germans only wanted to sell the Argentinians some more nuclear power plants. The delivery of an installation for producing heavy water, which would aid Argentina in achieving nuclear independence in the next few years, does not seem to be under consideration at the moment. Said Lambsdorff: "We are going on the assumption that we will not be delivering any heavy water technology."

Lambsdorff's declaration was surprising, since until now the Germans have been considered as being the preferred ones for delivering a heavy water installation for Argentina.

Argentina today has the most highly developed nuclear technology on the South American continent. Since 1974 the Argentinians have operated the only nuclear power plant in Latin America, the 340-megawatt installation "Atucha I," built by Siemens. They are experimenting with the reprocessing of spent fuel rods--a prerequisite for obtaining the plutonium needed for bombs. Moreover, the military in Buenos Aires have large sources of uranium available in their country.

Only one gap still remains to be bridged in the nearly complete atomic cycle. In order to spare themselves the technically complicated enrichment of the uranium ore, the Argentinians are burning their naturally occurring uranium. To cool such reactors, however, so-called heavy water is needed, which cannot be bought in Germany in the required amounts and

which the Argentinians up till now have had to import from the United States and Canada.

When the South Americans began to accept bids at the beginning of last year for their third nuclear power plant--the second is currently being built by a Canadian-Italian consortium--they also announced at the same time an installation for producing heavy water.

The Uhde Company from Dortmund tendered a bid, along with the Canadian Atomic Energy of Canada and the Swiss firm Sulzer. The German Kraftwerk Union was competing at the same time with the Canadians for the "Atucha II" commission, which is worth billions.

Politically, the eagerness of the German nuclear technologists was highly explosive. When permission to export both installations was being discussed in Bonn early this year, critics recalled that in June of 1977 the Chancellor had publicly promised to forgo, until further notice, the exportation of so-called sensitive installations, with whose aid plutonium can be manufactured.

To be sure, heavy water installations do not belong to the sensitive area of the nuclear cycle according to the guidelines agreed upon in 1976 by the nations furnishing nuclear materials. In the special case of Argentina, however, argued U.S. President Jimmy Carter, this installation was the only missing component for atomic autonomy.

So Bonn ran into a dilemma. On the one hand, Schmidt and Lambsdorff wished to aid the nuclear power industry to get new atomic exports. On the other hand, the Bonn government did not want the reputation of freely making available atomic technology for bomb manufacture.

When Lambsdorff landed in Buenos Aires at the beginning of last week, the power plant project was already at the signing stage. The economics minister was therefore figuring very strongly that the Argentinians would make its signing dependent on the minister's giving his assent to the heavy water plan.

The guest was therefore all the more astonished when the Argentinians hedged on the ticklish topic. They were ready, they told the minister, to give the go-ahead for "Atucha II" to the German Kraftwerk Union even without the heavy water agreement. A contract will be signed in the near future by the German contractor for the power plant and the Argentinian National Atomic Energy Commission, CNEA.

The Germans are now puzzling over why the Argentinians are no longer insisting on delivery of the heavy water plant. Apparently, the supposition goes, the South Americans were unable to calculate the reaction of the weakened Carter administration. The authorities in Buenos Aires considered that a halt to the delivery of heavy water from the United States could not be ruled out, in which case they would have had to shut down their "Atucha I" power plant.

However, "Atucha II" will presumably be the last heavy water nuclear power plant that the Germans sell to Argentina. German power plant builders fear that in the future the South Americans will order their atomic reactors from the same place that they get their heavy water, the United States or Canada.

8838

CSO: 5100

OFFERS, INTEREST IN ATUCHA II SURVEYED

Detailed Report On Offers

Buenos Aires LA OPINION in Spanish 2 Sep 79 p 14

[Excerpts] The purpose of this press conference is to comply with the duty we have under our republican system to inform public opinion on what the government is doing. In our case, this involves highly significant government activities aimed at energy development and the technological and industrial progress of Argentina, as represented by the awards of contracts for the construction of a heavy-water production plant and the installation of the Atucha II nuclear power plant, the latter being included in the plan for the construction of four nuclear power plants.

The federal government has considered it necessary to hold this meeting so that the newspapers and, through them, the whole country, may immediately have available reliable background data, issued by the appropriate agency responsible in nuclear matters, with which to evaluate the decisions that will require the support of all Argentines, the kind of support which the National Atomic Energy Commission has been getting throughout its entire history.

The Argentine Nuclear Plan is entering a new phase as part of the framework of coherence and continuity in the operations of the CNEA [National Atomic Energy Commission], as spelled out in Decree 3183/77, defining for the first time Argentina's objectives and policies in the nuclear field to be implemented through Decree 302/79 specifically authorizing the CNEA to issue the above-mentioned competitive bidding invitation which is the reason for this press conference here.

Bidding Invitation

When Decree 302 was signed on 29 January 1979, approving the Argentine Nuclear Plan consisting of four new nuclear power plants and their supplementary installations, the CNEA drafted a document entitled "Condiciones Generales y Particulares a los Oferentes" [General and Special Requirements for Offerors] on whose basis the bidding invitation was issued on 6 February 1979.

According to that document, each offeror would have to spell out the scope of his participation and could select the item on which he wanted to quote among those which are mentioned by way of summary below.

Supplying a heavy-water production plant with a capacity of 250 tons per year and, as option, if applicable, the supply of heavy water for the first power plant.

Supplying a natural uranium and heavy-water reactor, in any of its two versions, pressure pipes or pressure vessel, including the SNSV (Nuclear Steam Supply System), the turbogroup and the associated heat cycle, the supplements for the power plant's installations ("balance of plant"--BOP), and the specific information necessary to carry out the civil engineering phase of the project.

Cooperation in various fields of research and in future nuclear development.

Collaboration in completing the installations for the development and testing of new fuel elements, offering production licenses for the fuel elements corresponding to the reactor offered, and, as option, a guarantee as to the supply of the fuel elements necessary for the initial charge of the power plant and the first five years of operation.

Rendering services in terms of collaboration with the CNEA toward the attainment of the program's goals, either in its role as owner and project manager or including the function of industrial architect.

Offers Received

As of the closing date for the competitive bidding invitation (23 April 1979), the CNEA received the offers summarized below.

Atomic Energy of Canada Limited (AECL), of Canada.

Firm Offer

1. The following engineering work:

Conceptual design of nuclear island; engineering for the nucleus and the SNSV; supervision--without technical responsibility--of the engineering services which the CNEA will obligatorily have to contract for with Bidas Argatom for the detail design of the rest of the SNSV.

. Equipment for the SNSV.

3. Heavy water for the first charge and the initial reserves.

4. Helping the CNEA in its function as industrial architect.

Negotiation Proposal

1. Supply of heavy water for future power plants.
2. Supply of initial charge of fuel elements and recharging for the first five years.
3. Supply of a heavy-water production plant, subject to the award of a contract for four AECL reactors, according to a methodology to be spelled out.
4. Supply of information on the manufacture of fuel elements through Westinghouse Canada Ltd.
5. License for the sale of the SNSV and transfer of technology to Argentine industry.
6. Design of a 35-Megawatt experimental enriched-uranium reactor, establishment of an engineering laboratory, and cooperation in the evaluation of alternate fuel cycles.
7. Collaboration in the exploration of uranium through Eldorado Nuclear LTD.

After the competitive bidding closing date, two additional quotations were received in connection with the heavy-water production plant from the Lummus and Canatom enterprises--Bridas-Argatom, who would take care of the corresponding construction work, provided that a contract were to be awarded to AECL, previously and separately, for the transfer of the production technology which the latter owns.

Canatom (of Canada) and General Electric Company (of the United Kingdom), complementary offer with respect to AECL.

1. Formation of a company with the CNEA to act as industrial architect in connection with two alternatives (40 percent Canatom, 30 percent Canatom, and 10 percent GEC [General Electric Company]).
2. Supply of the turbogroup and the associated thermal cycle.
3. Transfer of technology to Argentine industry.
4. Assistance in research and development, particularly with regard to the following:

Through Canatom:

- (I) Engineering design for a reactor of the NRX type;
- (II) Indirect assistance in the manufacture of fuel elements.

Through GEC:

- (I) Development of irradiation reactors;
- (II) Development of quality controls in the manufacture of fuel elements;
- (III) Collaboration in the installation of a sodium circuit.

Through both companies:

- (I) Collaboration on the topic of fusion;
- (II) Cooperation with regard to heating cells for post-irradiation tests.

NIRA (Italian nuclear [company] for advanced reactors), of Italy, complementary offer with respect to AECL.

The offer presents two alternatives.

Alternative 1:

1. Supply of turbogroup and its associated thermal cycle and the DC systems (including spare parts and assembly supervision).
2. Basic engineering for civil engineering phase associated with preceding point.
3. Technical assistance for CNEA through the following:
 - (A) A consultation agreement with NIRA up to the creation of a company as mentioned in paragraph (B);
 - (B) Participation of NIRA in a mixed company with majority control by CNEA acting as industrial architect, created on the basis of Atucha II;
 - (C) Same as above, in a company with initial function as supplier of the second power plant, progressively to be transformed into those of the principal contractor.
4. Collaboration complementary to that of AECL in the experimental reactor, manufacture of fuel elements and heavy water.
5. Proposals for collaboration in fast [breeder] reactors, proposals for sales agreements involving heavy-water reactors in third countries, for Argentine participation in Italian programs, and for the participation of AGIP [National Italian Oil Company] in uranium prospecting and exploitation.

Alternative 2:

This one is similar to alternative 1, except for the fact that the company mentioned in 3 (C) would start its operations with Atucha II.

KWU [Power Plant Union], of the FRG.

The enterprise submitted two offers.

Offer 1: Construction of Atucha II with reactor equipped with pressure vessel.

1. Supply of equipment for nuclear and conventional segments, including BOP.
2. Participation in the establishment of an engineering company in which CNEA would hold 75 percent.
3. Participation in the construction of the three power plants to follow Atucha II in line with two alternatives, to wit: with the second, third, and fourth power plants equipped with KWU reactors or with the second, third, and fourth power plants equipped with pressure-pipe reactors of the storage-tank type.
4. Transfer of knowhow to Argentine enterprises for the manufacture of components and detail engineering.
5. By way of option, with firm prices, supply of fuel elements for first charge of Atucha II and for recharging for 5 years.
6. Collaboration in research and development on the following topics:
 - Design of experimental natural-uranium and heavy-water reactors;
 - Planning and construction of a zircalloy pipe factory;
 - Joint investigation of a process of nuclear purification of uranium;
 - Cooperation in the manufacture of fuel elements;
 - Development of new designs for fuel elements;
 - Collaboration in the optimization of the fuel cycle;
 - Construction of an experimental sodium circuit.
7. Participation in uranium prospecting and exploitation.
8. Supply of a simulator for training personnel to be employed in nuclear power plants.
9. Entering into licensing agreements with Argentine enterprises for the manufacture of essential parts for the turbogroup and condensers.

Offer 2. Construction of a Atucha II with pressure-pipe reactor.

1. Supply of turbogroup and its thermal cycle.
2. Management and coordination of assembly of conventional segment.

Sulzer Brothers Limited, of Switzerland, offered to supply a plant for the production of heavy water with an annual capacity of 250 tons.

UHDE [expansion unknown], of West Germany, offered to supply a heavy-water production plant with a capacity of 250 tons per year.

Analysis Of Offers

Considering the fact that the power plant will not be built on the basis of a "turnkey" contract and that one of the offerors only proposes to supply the SNSV, the determination of the total cost of each of the reactor types made it necessary to add the estimate of the cost of domestic supplies to the firm price quoted by the foreign suppliers.

Table I shows an itemized price breakdown for both reactor alternatives, including the missing portions required to get a complete power plant in each of the technologies offered.

Table II shows the corresponding generation costs for both types of reactors.

As for the heavy-water production plant, table III summarizes the prices and the guaranteed output from each of the respective offerors.

Table I. Itemized Breakdown of Prices for Both Alternatives for the Atucha II Power Plant
(in thousands of U.S. dollars)

ITEM	PRESSURE-VESSEL REACTOR (698 MTU, net)	PRESSURE-PIPE REACTOR (693 MTU, net)
1. Electromechanical supplies		
1.1--SNSV	333,510	114,180
1.2--Turbogroup and thermal circuit	363,354	100,360
1.3--Balance of plant		86,920
1.4--Spare parts and consumption materials	33,092	21,000
1.5--Approval costs	47,721	37,470
Subtotal: electromechanical supplies	777,677	359,930
2. Civil engineering phase	161,143	135,160
3. Engineering	140,980	133,770
4. Assembly		
5. Project management and administrative costs	166,330	165,150
6. Start-up and personnel operations		
7. Transportation and insurance	43,800	33,000
8. Other owner's expenditures	129,170	108,540
9. First fuel element nucleus	26,413	16,300
10. Subtotal	1,445,513	957,950
11. Heavy water	133,272	117,840
12. Total investment	1,578,785	1,075,790

Table II. Comparison of Generating Costs of the Two Types of Reactors

ITEM	PRESSURE-VESSEL		PRESSURE-PIPE	
	REACTOR		REACTOR	
1. Specific cost (\$/kwh)	2,261.9		1,691.5	
2. Utilization factor;	0.85		0.85	
3. Uranium cost (\$/kg U)	120		120	
4. Fuel element manufacturing cost (\$/kg U)	194		116	
5. Fuel element storage cost (\$/kg U)	55.1		30.9	
6. Capital cost (mills/kwh)	38.78		28.74	
7. Cost of fuel cycle (mills/kwh)	6.45		5.83	
8. Cost of operation and maintenance (mills/kwh)	2.99		3.47	
9. Total generating cost (mills/kwh)	48.22		38.04	
10. Difference (mills/kwh)		10.18 (26.8%)		
11. Difference during 30 years for generation of 4,736 Mwh/year (\$10 ⁶)		542.9		
12. Indirect bonus [discount] inherent in type of power plant as credit in fuel cycle (\$10 ⁶)	160			
13. Total generating cost considering bonus [discount] (mills/kwh)	45.23		38.04	
14. Difference (mills/kwh)		7.19 (18.9%)		
15. Difference during 30 years for generation of 4,736 Mwh/year (\$10 ⁶)		382.9		

Table III. HEAVY-WATER PRODUCTION PLANT

OFFEROR	ACEL + LUMM	ACEL + CANAT.	SULZER	UHDE
Approximate prices in millions of U.S. \$	380	405	290	235
Guaranteed output (in t/yr)	250	250	200	200

British Interest

Buenos Aires CONVICCION in Spanish 30 Aug 79 p 14

[Text] Lord George Nelson of Stafford, president of the General Electric Company of Great Britain, declared that his visit to Argentina is intended to analyze with the authorities the offer which his enterprise submitted together with the Canadian outfit for the supply of equipment to be used in the planned Atucha II nuclear power plant.

"It is my opinion that trade relations between Argentina and the United Kingdom can and must grow in the interests of both countries and I am confident that my visit will make a contribution toward that end," he told the press.

Lord Nelson, spokesman of the House of Lords on energy matters, explained that the enterprise of which he is president is one of the biggest companies in the engineering field in the United Kingdom.

The offer for Atucha II, "which was submitted by General Electric Company of Great Britain, together with Canadian authorities, includes technical collaboration, association with Argentine companies, and financial support," he indicated.

He said that, in Europe, "there is interest in investing in developing countries, particularly where there are no fuel problems, such as in Argentina."

He emphasized that Argentina "has a stable government and has tremendously improved its financial position abroad over the last several years which makes it a very attractive area for investments."

Lord Nelson announced that he requested an audience with the President of the Nation Jorge Rafael Videla and the commanders-in-chief of the Armed Forces, as well as economy minister Jose Martinez de Hoz and the chairman of the National Atomic Energy Commission, RAdm Carlos Castro Madero.

The British businessman also declared that his company has already made some investments in Argentina and he added: "I hope that, as a result of projects such as Atucha II, which we are considering with the Argentine authorities, this will automatically lead to investments in association with businessmen of Argentina."

Lord Nelson sketched the development of bilateral relations, stating that, quite some time ago, "it had reached a considerably high level, and at that time we were very important customers of each other."

"But in recent years, that position has deteriorated for a number of reasons and I think that it is important for us to restore the situation we had in the past," he noted.

ARGENTINA

CORDOBA ENTERPRISE WINS BID TO EXTRACT URANIUM

Buenos Aires LA NACION in Spanish 16 Aug 79 p 10

[Text] Cordoba--The President of the National Atomic Energy Commission (CNEA), Rear Admiral Carlos Castro Madero, announced here the signing of a contract with a Cordoba enterprise--Sanchez Granedo and associates--to begin exploration of the Los Gigantes uranium deposits.

Rear Adm Castro Madero came to Cordoba yesterday at the special invitation of the Provincial Energy Enterprise of Cordoba (EPEC) to speak on the Argentine Nuclear Plan and its future projection. Attending the event were Provincial Economics Minister Horacio Alvarez Rivero, Third Army Corps Commander Maj Gen Luciano Benjamin Menendez, directors of the EPEC and authorities of the National University of Cordoba.

Following the conference, the head of the CNEA spoke with reporters and indicated that granting uranium exploratory rights to a private enterprise "is a practical demonstration of the new policy established by the government concerning the transfer of production activities to the private sector."

He added that "this will relieve the State of having to make investments of capital and economic resources in operating costs, since expenditures for the acquisition of uranium will be borne by nuclear electrical power plants. There is, as a positive consequence, greater private participation in new-technology activities, promoting, to a certain extent, the economy of the Province of Cordoba."

Castro Madero also stated that Cordoba "will be the first province to have a mining-manufacturing complex for the production of uranium as a responsibility of the private sector. He added that "the estimated reserves of the Schlagintveit mine alone come to some 1,400 tons of concentrate. To that one can add the reserves of the 'Doctor Olsacher' and 'Don Goyo' mines, as well as those adjacent to the Schlagintveit."

He also announced that the Rio Tercero Dam station would begin operation in March, 1982, a year and a half later than originally planned. "This is the case because its construction had to be renegotiated in July, 1976, when

129 million additional dollars were allocated, bringing its final cost to an estimated 800 million dollars."

Castro Madero stated that "there is a worldwide decrease in demand for the construction of nuclear power generators, a circumstance which decidedly favors us. The government plan foresees three more nuclear power plants by 1977 [as published], besides Atucha I, which has been in operation since 1974, all of which puts us in an excellent situation in comparison to the other Southern Cone countries."



The Los Gigantes uranium deposits that will be explored and exploited by a private Córdoba enterprise, are located east of the provincial capital.

9077
CSO: 5100

ARGENTINA

HEAVY WATER CARGO ARRIVES FROM CANADA

Buenos Aires CONVICCION in Spanish 17 Aug 79 p 12

[Text] Reliable sources indicated that a shipment of 20 tons of heavy water, originating from Vancouver, Canada, arrived yesterday on board the Argentine steamer "Entre Rios" at the local port. The sources added that part of the shipment is destined for the power station at Embalse, in the Province of Cordoba, and the other part will serve to replace heavy losses suffered at Atucha.

The shipment underwent difficulties at the port of origin, owing to the fact that as the cargo was about to be loaded, groups of Canadian longshoremen refused to proceed with the loading, arguing alleged violations of human rights in Argentina.

The drums containing the heavy water were moved from the port at Buenos Aires to Cordoba by road. The National Atomic Energy Commission, consulted about the matter, denied having any knowledge of the unloading of the deuterium.

Argentina needs to buy heavy water (deuterium) in Canada for its power generators because these use natural uranium as fuel. In order to free itself from the financial and technical dependence implicit in these purchases, Argentina is trying to manufacture heavy water within the country. To that end, enterprises have been invited to offer bids for the construction of such a factory.

These offers, however, are conditional upon the acceptance of total safeguards by the Argentine government, to assure that production is geared to peaceful use only.

9077

CSO: 5100

ARGENTINA

BRIEFS

POSITION ON NUCLEAR ENERGY--Montevideo—"Argentina does not intend to establish any leadership in matters of nuclear energy on the continent," according to the chairman of the Argentine Atomic Energy Commission, Rear Adm Carlos Castro Madero. Referring to the assistance plan signed with Uruguay, which will permit Argentina to install an atomic reactor and carry out uranium prospecting in Uruguay, Castro Madero stated that "the Argentine government intends to establish a real inter-American cooperation, without seeking leadership in this field. He added that "no one can deny the importance of nuclear energy on our continent, whether we are dealing with radioisotopes or nuclear power plants." [Text] [Buenos Aires LA NACION in Spanish 15 Aug 79 p 4] 9077

CSO: 5100

BRIEFS

ROESSING, LARGEST URANIUM DEPOSIT--Windhoek: One of South West Africa's fastest growing mining giants is Roessing Uranium situated near Swakopmund. The Roessing ore body is the largest known deposit of uranium occurring in granite, according to the company's house magazine. It was formed nearly 500 million years ago, when molten granitic magma moved upwards from great depths, into the overlying layers of compressed sedimentary rock. The shape of the open pit follows the arrow-like outline of the ore zone which points towards the south east. Illustrations on this page. The mine complex incorporates engineering workshops, administrative offices, a fire station, first aid clinic and shower and change rooms. The mine employs 2,800 people. The plant is designed to produce 5,000 metric tonnes per year of uranium oxide. This output requires a milling rate in excess of 40,000 00 tonnes of ores a day. Uranium from Roessing goes to customers in many countries. Many stages of further processing turn the uranium into fuel elements for nuclear power stations; one drum of uranium oxide contains the energy equivalents of 23 000 barrels of crude oil. [Excerpt] [Windhoek WINDHOEK OBSERVER in English 1 Sep 79 p 27]

CSO: 4420

NEW ACCURATE URANIUM DETECTION METHOD DISCOVERED

Capetown DIE BURGER in Afrikaans 28 Aug 79 p 5

[Text] A new and extremely accurate method for detecting uranium has been developed and patented by the Atomic Power Board. The detecting device is already being manufactured by a South African company under license of the Atomic Power Board and has been marketed since April, according to an article appearing in WETENSKAPELIKE VORDERING [Scientific Progress], a publication of the prime minister's Scientific Advisory Board.

The new detection technique was made possible through the Atomic Power Board's chemical department's development of a successful method for determining the presence of radon-222 gas in the ground. Radon indicates the presence of uranium deposits.

The presence of uranium is revealed by radiation. Geologists can observe this radiation with the help of instruments during recordings on the surface and from the air. This method is effective only when the uranium deposit is on or near the surface of the ground.

Deep

Even a ground layer of 1/2 meter can completely suppress the radiation. Deep deposits must therefore be detected through other methods.

Radioactive gas radon-222 is formed during the radioactive decay of uranium. This chemically inactive gas can penetrate the ground to a considerable distance before it decays still more. The presence of this gas close to the surface can therefore indicate the presence of a uranium deposit even though it may lay at a considerable depth.

Even above a large uranium deposit there will be less than 1 millionth cubic mm of radon within a manageable quantity of surface air and it is extremely difficult to detect and measure such small quantities of the gas.

The existing technology for measuring the gas is expensive and full of practical problems. The Atomic Power Board's chemical department thus sought other methods for detecting the gas. The new method which has been developed is referred to as the radon-op-geaktiveerde-koolstofstelsel (Roak-system), (radon-on-activated carbon-system).

With this system an open container containing active carbon covered by a plastic sheet is buried in the ground and allowed to stay there about 1 week.

During this period the radon is absorbed by the carbon. The container is then removed and sealed tightly. A simple counter is then employed for measuring the radioactive radiation of the radon's byproducts. This reading is proportional to the radon concentration in the surface air.

This method is cheap and can be used by persons who do not have any scientific background. It provides a final result on the spot.

7964

CSO: 5100

BELGIUM

BELGIANS POLLED ON NUCLEAR POWERPLANTS

Personal Comfort Preferred

Brussels LE SOIR in French 1 Sep 79 p 2

[Text] The "Votre avis"—Uw mening" Association, a combination of six major private Belgian market research and public opinion survey institutes (Aspemar, Cegos-Makrotest, Dimarso, Marketing unit, Sobemap, and Suma) conducted a public opinion survey on energy exclusively for the Belga Agency. A representative sample of the Belgian population, numbering 8,000 individuals between the ages of 15 and 64, was asked about 50 questions.

The most important lesson to be learned from this public opinion survey is that the idea of maintaining the current comfort level must prevail over the idea of abandoning the nuclear industry in the view of a majority of the persons questioned.

The people are aware of the importance of energy saving measures; the population is interested in that and wants to do something "provided one does not touch the comfort of our society of well-being."

It also appears that the people are less convinced that the government several months ago did everything it could to resolve the energy crisis.

The survey involves a first group of questions of a general nature. Thus, 70.7 percent believe that energy saving constitutes an important problem at this time (for 50.3 percent it is even very important). Only 6.6 percent of the population did not assign any importance to energy savings; 62 percent of the people moreover assign more importance to energy savings than did 12 months ago. More than 56 percent of the Belgians declare that they are taking energy saving measures; these relate above all to heating cutbacks. There is some heat insulation being put in and there is some economizing on interior lighting but we detect a strong reluctance to make any savings having to do with private motor vehicle use; 48 percent of the persons questioned are making savings by cutting the heat off in unoccupied

rooms in their homes; 35 percent are reducing their heating and 17 percent have adopted or are going to adopt a heat control system.

The Untouchable Car

A small number of persons (8.6 percent) use less rooms in their homes and an even smaller number (5.1 percent) switched or are going to switch with respect to the type of fuel they are using. Some savings are being made in the matter of hot water consumption; almost 18 percent of the people are lowering the temperature of their utility water. 14 percent are trying to consume less, and close to 10 percent are economizing on wash water. Regarding heat insulation, most of the savings are confined to putting weather stripping along doors and windows (30.3 percent). People are also taking care to improve the insulation of the attic (23.8 percent) as well as cavities in walls (15.4 percent) or they put in storm windows (19 percent); 36 percent of the people declare that they are using less domestic lighting and some (9.3 percent) are limiting the use of various electrical household appliances.

The percentages of savings made in car use are among the lowest. The most successful method consists in increasing the vehicle occupation level (18.3 percent of the persons questioned, even among those who do not have cars, recommend this type of savings). Very few people (7 percent) are thinking of reducing the use of their cars for job-related purposes. Close to 7 percent however would agree to switch to a smaller car. An identical percentage recommend that cars be used less for pleasure.

Hardly Any Radical Opposition to Nuclear Energy

Under the heading of nuclear energy, we find that the hard-line opponents remain definitely in the minority. Only 14.7 percent of the persons questioned declare that they are in favor of the immediate and irrevocable stoppage of energy generation of nuclear origin. That however does not mean that the others are generally very favorable toward nuclear energy: 24.6 percent propose a continuation of the development of nuclear energy, 27.9 percent agree on the idea of stopping this effort temporarily. That is to say, until all of the safety and waste storage problems have been solved, 21.4 percent feel that one can allow the current power plants to be operated during the period of time provided for but that one should not start any new ones up. Thus, 74 percent are not fundamentally opposed to nuclear energy and 52.5 percent are favorably inclined toward it, either completely (24.6 percent) or with some reservation.

It also appears that nobody or almost nobody would like to have a nuclear power plant built near his home. Nevertheless, this fear does not apply to electric power generation as such; more than one-third of the people agreed to permit a complex of thermal powerplants—not even too far away from them—supplying the same power as a nuclear powerplant.

More than 63 percent of the people are opposed to a decision to build a nuclear power facility less than 10 kilometers from their homes; but the fact remains that more than 24.4 percent consider it necessary in that case to leave their homes; 44 percent of the people in effect admitted that in such a case they would remain in their homes; 15.8 percent would hold on to their homes "provided they would get certain compensation" and 9.1 percent would keep their homes "provided they get certain reductions on energy consumption rates."

The fundamental question put to the people was this: Would you agree to the idea of abandoning nuclear energy and having each family forced to reduce its home comforts? Well, 63 percent of the people did not respond in the negative. The answer was almost always the same however when the term of the question was altered: Should we drop nuclear energy and be forced to reduce electric power consumption?

Referendum

Questions having political implications were also asked. Thus the following question was asked: Should electric energy generation be entirely in government hands? While 21.6 percent did not know the answer to that one and while 25.3 percent answered "no," have of them did respond in the affirmative. And when the interviewers tried to find out whether "the government is doing everything it can to resolve the energy crisis," only 24.8 percent of the people questioned said that they thought so.

The Belgians finally want to have their say and want to be consulted: 67.5 percent of the persons questioned, in other words, a heavy majority for this kind of public opinion surveys feel that a referendum must be organized before any further continuation on the construction of nuclear powerplants.

Tihange Strike Continues

Brussels LE SOIR in French 1 Sep 79 p 2

[Text] We have received the following communique from Mr van den Damme, director of Intercom:

"As announced earlier, the Tihange was shut down early in August for miscellaneous maintenance work and to check certain circuits out.

"These inspections revealed slight defects (microcracks) in an auxiliary circuit, called the 'reactor shutdown cooling circuit.'

"It should be noted that these microcracks are on the order of several tenths of millimeters on pipes with a thickness of 12 millimeters.

"Although these defects are not serious, it was decided, in agreement with the control authorities, to use the summer season (consumption in August is

about 25 percent less than in December) in order to correct the situation by replacing certain sections of piping. This operation made it necessary to repair the welding on pipes with a diameter of 35 centimeters, made of inoxydable steel. This welding operation requires highly skilled manpower and, since this is a nuclear powerplant, the work will be subjected to very thorough inspection.

"Right now, the entire circuit has not yet been successfully subjected to all of the prescribed inspections and it is still scheduled for a water pressure test before operations to start the powerplants up again can be begun.

"Under these conditions, it is difficult to set a precise target date for the unit's return to service. It should however come during the first few days of September."

5058

CSO: 5100

FEDERAL REPUBLIC OF GERMANY

SOCIAL DEMOCRATIC PARTY COMMISSION FAVORS NUCLEAR POWER

Bonn DIE WELT in German 23 Aug 79 p 4

[Text] The energy policy commission will recommend limited development of nuclear energy to the SPD executive board. This will improve the chances that the Berlin Party Congress (3 to 7 December) will adhere to the guideline accepted in November 1977 in Hamburg. This guideline will probably be stressed even further because events during the past 2 years have "considerably complicated" any solution to energy policy problems: energy conservation and the development of new energy sources have become more critical, coal is to be given express priority for the production of electricity, and an absolute objection to the use of nuclear energy does not appear justifiable at present.

It is concluded, however, from the accident at Harrisburg and the delays at the nuclear waste storage center at Gorleben "that a forced development of nuclear energy is at present not possible, either politically or legally."

The 14-member commission under the chairmanship of Horst Ehmke (deputy chairmen are Erhard Eppler and Volker Hauff) will decide over new motions on permit policy for nuclear plants, with majority and minority vote, during a 2-day session on 30 and 31 August. Part of the commission (the draft report by Ehmke does not specify whether a majority or minority) argues in favor of issuing operating permits for nuclear plants presently under construction, even if storage of nuclear waste "is secured by the construction of sufficient interim storage facilities." According to the Hamburg resolution of 1977, the following conditions for issuance of a permit were in effect exclusively: first partial construction permit for the integrated nuclear waste storage center or binding contracts with foreign storage facilities.

An 80-Page Paper

Other commission members favor "a stop on all construction and additional permits for new light water reactors for a limited period of time, because this is the only way to bring about the pressure necessary for the full development of all alternative solutions."

The answer of the first group to this, however, is that--because of the foreseeable industrial-political consequences to such a moratorium--the nuclear energy option would meet with a negative decision right now." Reference is made to the contradiction to the Hamburg party resolution according to which "no final decision in nuclear energy matters can be justified today, either in favor of further development or against it."

Ehmke's draft of the first interim report is to be approved during the session and sent to the executive board of the party, which will discuss it in its session on 10 September. They will decide at the same time on who is to write the proposal for Berlin. It is generally assumed that this task will also fall to the Ehmke commission.

The emphasis of the 80-page Ehmke paper lies on the discussion of future nuclear policy, although the level of energy supplies in the FRG and topics such as energy conservation, new energy sources, as well as fossil fuel are also dealt with.

Over a Period of Time

The report deals in more detail with nuclear fuel supplies, with the consequences of Harrisburg, and with the storing of nuclear waste materials. In view of the nearly total dependency on import of natural uranium and of the politically motivated stop on supplies (Canada, United States), "a considerable increase in the percentage of nuclear energy in the total energy supply would make the natural uranium supply risky because of dependency on a few potential supplier countries.

The report states that the Harrisburg accident must be "cleared up completely." Should any safety considerations still remain after that, then German nuclear power plants would have to be either improved or else shut down. The commission also emphasized the necessity for international agreement on reactor safety.

It does not want to give up the concept of integrated nuclear waste storage in spite of the resistance from Niedersachsen. The suitability of the salt mines in Gorleben would have to be sufficiently proven first, however. In this connection, the commission recommends "proceeding step by step over a period of time"--especially since approximately 20 years can be bridged with the construction of up to 8 interim storage facilities. "Every land in which one or more nuclear power plants are in operation must be totally prepared to build an interim storage facility;" this is the position regarding a question which is a matter of dispute between the Federal government and some lands. It is emphasized that supra-regional interim storage facilities would still be necessary even if many compact storage facilities would be built.

FINLAND

ANTINUCLEAR MOVEMENT HAS LITTLE SUPPORT FROM LEFT

Stockholm DAGENS NYHETER in Swedish 1 Sep 79 p 25

[Commentary by Tor Hognas]

[Text] Although the Finnish nuclear power industry has been hit by many problems, suspensions of production and accidents, there is no debate on nuclear energy. As late as the day before yesterday, the fueling of Finland's third nuclear power plant was stopped when cracks were discovered in the Russian-built reactor tank. The Finnish public is still asleep, says Elina Hytönen, a nuclear energy opponent who has been trying in vain to get a debate started.

According to Elina Hytönen, an active Finnish cultural worker and opponent of nuclear energy, Finland needs no new gigantic power plant--with its slightly more than 4 million inhabitants, the country has too much electrical energy as it is. It was unnecessary to build the two Soviet reactors at Lovisa and the two Asea-made reactors at Olkiluoto near Raumo. And it is completely insane to plan a nuclear power plant of 1,000 megawatt.

She wants to awaken the Finnish labor movement to the realization that Finland is set on a dangerous road. She belongs to the movement of the People's Democracy (the Communists) but feels increasingly discouraged by the fact that there as well as in governing circles, people dare not discuss the nuclear energy question.

Not even Harrisburg could arouse an expression of opinion. The Finnish-language press of the People's Democracy does not want to publish her articles.

She is discouraged but does not want to give up. Elina Hytönen became an active member of the anti-nuclear energy movement in 1976. The following year, the "Energy Political Society Alternative to Nuclear Energy" was formed with Professor Matts Roos as its spokesman. He participated in the building of Sweden's first nuclear power plant and is an expert on the subject.

The society had a modest start, but it has gradually got more members and sympathizers.

Elina Hytönen says that it was the Fenno-Swedes who gave the alarm in the nuclear energy question. One reason was that the state-owned power company Imatran Voima was building the first two nuclear power plants at Lovisa and was planning a third one at Ingå a few miles west of Helsinki. The people in the Swedish villages protested, active groups arose spontaneously, joining the Energy Political Society Alternative. Another reason was that the Swedish-speaking section of the population had its windows open towards the West, receiving impressions from Sweden and other countries of the West.

The first anti-nuclear energy book in Finland was published in Swedish, written by two journalists of VASAHLADET, Ingmar Kommonen and Dennis Rundt.

In the opinion of Elina Hytönen, the Finnish-speaking public is still asleep.

One-Sided

"This is especially true among workers, where the knowledge of languages is not as great and where the information in their own press hitherto has been one-sidedly for nuclear power plants. When the big brother in the East says that nuclear power plants are foolproof, they believe it. Besides, the Left does not want to run the risk of expressing heretical views which could be interpreted as departures from the official policy of friendship."

"FOLKTIDNINGEN NY TID is increasingly becoming a welcome exception, but it is printed in Swedish, and its message does not reach the big Finnish-speaking masses. It shows, however, that it is possible in Finland to combine Leftist views with nuclear energy resistance. But the Finnish-speaking Left cannot see this. Not even the Social Democrats have awakened."

The Social Democratic party secretary and new Minister of Trade and Industry Ulf Sundqvist, recently pointed out the ease with which nuclear energy can be adapted to Finnish conditions.

Strong Support

Elina Hytönen has tried to influence opinions among women--and with some success. The first ecological-political group was formed some time ago. And among feminists she has found strong support for her views.

"Women react more strongly--more spontaneously--against nuclear energy than men. It is we who carry and bear the children. Men are more impressed with technology than we women," she says.

The Communists are strongly in favor of the nuclear power plant at Lovisa, which is a result of Soviet-Finnish technological cooperation. The Soviet Union, moreover, has promised to take care of the highly radioactive waste--at least for the time being. What remains left is the low level radioactive waste, which must be disposed of in Finland. Not to mention the Asea-built Olkiluoto plant where all waste must be disposed of at home.

Nuclear Waste

"They are now looking into the possibility of storing the nuclear waste in mountain rock. Reports to the effect that the 'safe' Finnish mountain rock would become the storage place, even for nuclear waste from other countries, have been denied. But can one be so absolutely sure that an agreement will not be worked out behind the backs of the people?" Elina Hytönen wonders. Things like that have happened many times before.

"Nobody has asked their fellow countrymen in Finland if they wanted the four nuclear power plants which now exist--two are being built and the two other ones will soon be fueled," Elina Hytönen points out.

"The Communists have no reason for having a good conscience with regard to the nuclear energy question, despite the fact that their party leader Aarne Saarinen asked the question in Parliament how the Olkiluoto power plant will solve the question of disposal of its nuclear waste," she says.

Marx Knew Nothing

Nuclear power plants are dangerous, no matter who owns them and from where the reactors come. It is wrong to believe that Socialism can change the forces of nature.

"Karl Marx did not know of nuclear energy or the term ecology--it is not possible to quote him. He was of the opinion that man should exploit the natural resources, which he considered unlimited. We now know better--that is why ecology constitutes a warning to the labor movement. It is time for a reevaluation. The philosophy of growth is a thing of the past," says Elina Hytönen.

In Finland, her views are considered heretical, especially within the movement of the People's Democracy, which she joined in the sixties when she was active within the society Majority. They were fighting against motorizing, for better town planning, for a more child-oriented society. Group 8 in Sweden gave them their ideas.

Conservative

Socialism was the obvious cause--at the time. The only true alternative. She now notices that the Socialists often are the most conservative ones on the question of nuclear energy. Instead of using the resources on research for other alternatives, they invest huge sums in nuclear power plants and on research how to solve the question of nuclear waste disposal.

Nuclear energy is the most costly alternative--and the most dangerous one.

"The first nuclear power plant at Lovisa, which was to cost 550 million mark, swallowed up more than 1 billion mark. And the Olkiluoto power plant costs 4.5 billion mark. And just the security supervision of all experts at Lovisa costs millions a year," she says.

Same Type

After the Harrisburg accident, Finnish experts said that a similar accident cannot happen at Lovisa despite the fact that it is a question of the same basic type of reactor. The management at one of the Olkiluoto power plants, in their turn, stated that something similar cannot happen there as the reactor is of a different type (pressure boiler reactor).

The fact remains, however, that radioactive water has leaked from the reactor at Lovisa--though in small quantities, according to Anders Palmgren, production manager. Also at Olkiluoto they have had all kinds of problems. These problems are referred to as technical disorders. The reactor recently had to be shut down for 4 weeks.

And when the power plants will have to be closed down around the year 2000--what will happen then? According to Professor Matts Roos, it will be 340 years before people can fairly safely stay in the vicinity of old power plants. The reactors will have to be cooled down and stored for hundreds of years.

"Has anybody made any calculations as to how expensive the energy is that is being produced by nuclear power plants?" Elina Hytönen wonders.

7262
CSO: 5100

PIPE RUPTURE SHUTS DOWN OLKILUOTO NUCLEAR POWERPLANT

Poor Quality Pipe Suspected

Helsinki HELSINGIN SANOMAT in Finnish 31 Aug 79

[Article: "Managing Director von Bonsdorff Suspects: Poor Quality Pipe Caused Leak"]

[Text] Managing Director Magnus von Bonsdorff of Teollisuuden Voima (Industrial Power) considers the poor quality of the metal in the piping to be the apparent reason for the pipe rupture on Wednesday at the Olkiluoto Nuclear Powerplant. A shortness of the pipe or excessive vibration in the pipe system were thought to be as other possible reasons on Thursday.

Late Wednesday night approximately 5 cubic meters of radioactive water leaked onto the floor of the pipe room at the Olkiluoto Nuclear Power Plant.

"Radioactive emissions increased somewhat temporarily in the room, but the leak did not cause any radiation in other facilities of the plant or outside of the power plant," stated Managing Director Magnus von Bonsdorff.

The leak was the result of a rupture in the pipe system of the purification system for reactor water. The leak in the pipe occurred outside of the actual protective structure of the reactor.

Radioactive water flowed from a rupture 15 centimeters long and 2 millimeters wide. The reactor's automatic observation and security systems noticed the leak immediately and isolated the defective portion of the pipe according to the Radiation Safety Institute.

The Olkiluoto Nuclear Powerplant which has been operating at approximately 65-percent capacity, was shut down immediately. The leak occurred on Wednesday night at 21:35. The plant's reactor was put into a so-called cold shutdown state on Thursday morning at 10:20.

The major portion of the radioactive water flowed through the floor drains of the pipe room into the powerplant's waste treatment system. According to the Radiation Safety Institute there are small amounts of radioactive impurities still left on the surface of the floor and the wall.

No radioactive substances leaked to the outside of the nuclear. Small amounts of radioactive iodine and precious gas entered the atmosphere of the room and the filters of the ventilator system. However, exhaust system meters have not observed any radioactivity differing from normal amounts, states the Radiation Safety Institute.

The pipe room on the floors of which radioactive water leaked to a depth of approximately 10 centimeters was isolated immediately. Those who went into the room to take samples wore protective clothing. Normally no one works in the room.

Those who were at work in the power plant at the time of the leak were not contaminated even though radioactive substances were observed on the protective clothing of one worker. After changing clothes he was also confirmed to be contamination-free.

Reason for Leak Still Unexplained

Managing Director Magnus von Bonsdorff of Teollisuuden Voima stated that for the time being there is no explanation as to why the leak in the pipe system of the purification system occurred. He considered one possibility to be a poor quality of metal in the pipe. Professor Antti Vuorinen of the Radiation Safety Institute does not consider the Olkiluoto leak to be dangerous from the point of view of safety. "The powerplant was shut down immediately and on Thursday morning it was already cold. The safety installations operated in the expected manner and the situation was under control the whole time."

Professor Vuorinen notes that these kinds of leaks occur "now and again" since in nuclear powerplants there are many kilometers of pipe network just as in any other plants of the processing industry.

Just as von Bonsdorff, Vuorinen believes the water pipe ruptured due to a manufacturing defect. The final reason has not yet been clarified. Other possible reasons are a rupture resulting from vibration or simply that the pipe was too short.

Several Problems This Summer

The release of the Olkiluoto Nuclear Powerplant to the customer or Teollisuuden Voima was to have taken place already last year. Because of several operational difficulties, the release was postponed until 1 July 1979.

The leak on Wednesday is already the third problem since the above-mentioned release date. During the stoppage of the powerplant which began in July the generator rotor of the turbine was exchanged for the rotor originally intended for the second unit.

In August a leak was found in the oil system of the first unit at Olkiluoto, which resulted in a leakage of sea water intended for cooling into the oil system.

Because of this last defect, the powerplant will have to be kept out of operation several days, estimates Managing Director von Bonsdorff.

At this time in Finland there is one nuclear powerplant or the first power plant at Loviisa in operation. The second phase of Loviisa should be completed this fall.

The first powerplant at Olkiluoto is for the time being still in a testing stage. The loading of Olkiluoto's second unit is slated to begin in October.

Olkiluoto II's Operations Permit Supported

The Council on Energy Policy is supporting the granting of an operations permit for the second power plant of Teollisuuden Voima at Olkiluoto. In its statement to the Ministry of Trade and Industry the council, however, proposes that permission be granted only until the end of 1983 just as for the first unit of TVO [Teollisuuden Voima].

Teollisuuden Voima has still not been able to resolve the problem of waste treatment for both of the nuclear powerplant units at Olkiluoto. Also it is intended to temporarily store the waste from the second plant on the grounds of the powerplant until a final solution can be found.

Taking into consideration the level of international technology and safety the holder of the permit has not had opportunities for any far-reaching concrete plans. On the other hand, the economic execution of energy management supports putting the completed nuclear power plant into operation when it can be done so safely taking into consideration the level of international safety and technical development, states the Council on Energy Policy in its statement. According to the Council on Energy Policy the permits for TVO II can be granted according to the same stipulations that applied to the permits for the first powerplant unit.

Expert Says Equipment Misused

Helsinki HELSINGIN SANOMAT in Finnish 2 Sep 79 p 9

[Article: "Ambiguities in Instructions or Placards, Water Was Incorrectly Conducted Into Broken Pipe"]

[Text] An operational error caused the pipe rupture that occurred on Wednesday at the Olkiluoto Nuclear Powerplant. In the studies conducted at the power plant it was observed that the damaged portion had been used incorrectly.

Professor Antti Vuorinen of the Radiation Safety Institute stated that the rupture in the pipe had occurred as a result of thermal strain. Water had been conducted into the pipe from two directions, through the cooler as well as incorrectly from by-pass routes without being cooled.

For the time being it is not known whether the ambiguities were in the operations instructions of the installations or on the indicator placards.

The damaged section of the pipe was dismantled and cut open for the studies on Friday. In addition to the 15-centimeter rupture, there were definite fractures on the inside, which clearly point to thermal stress.

In a further clarification of the matter it was confirmed that water had been continuously conducted to the damaged section, half of it through the cooler and half of it through the by-pass. Under normal conditions the flow of water should, however, be directed only through the cooler. The by-pass route is used only when the reactor is not in use or when it is not in production.

At the time of the accident the reactor was in normal production.

The 150-kilometer pipe belonging to the purification system ruptured late Wednesday night. Approximately 5 cubic meters of radioactive water leaked from the rupture onto the floor of the pipe room.

The power plant had to be shut down. However, the leak did not cause any harm to personnel or the environment.

The possibility of a planning error had already previously been excluded in the study. The plan was to continue to concentrate on finding defects in the material used.

The damaged pipe was returned and sent to experts for further study. Studies will be continued for the purpose of confirming the cause.

Teollisuuden Voima did not want to take a position on the cause of the accident since the study is not yet complete. According to Operations Chief Olavi Vapaavuori repair work is now underway.

An Isolated Technical Defect

The Radiation Safety Institute states in a statement to be delivered on Saturday that it does not consider the damage to the pipe in the first unit of the power plant to be such a serious event that it would change the overall treatment of the institute regarding the level of safety arrangements at both power plants of Teollisuuden Voima.

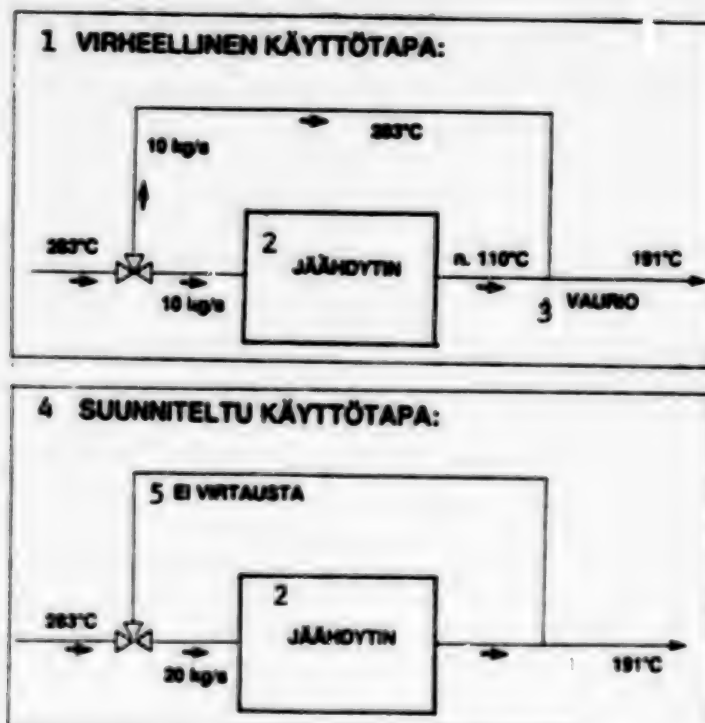
In the statement the damage is rather considered to be an isolated technical defect, the causes and consequences of which have been clarified at this stage to a rather great degree of certainty. The institute emphasizes that

these causes and consequences can be rectified in a few days.

However, before the first unit is put back into operation the institute intends to make certain that the results of the additional studies being conducted on the damaged pipe support the institute's evaluation of the causes. Also studies will be conducted to make sure that there are no corresponding points of damage in other systems of the plant.

Before the second unit at TVO [Teollisuuden Voima Olkiluoto] is put into operation the Radiation Safety Institute will also ascertain that the errors made in the first unit at TVO will be avoided.

After the accident the safety systems at Olkiluoto functioned in their designed manner: the reactor closed down automatically and the damaged pipe was isolated from the reactor's cooling system. After the accident the power plant was put into a state called cold shutdown according to the proper sequence and radiation protection was arranged in the same manner, stated the Radiation Safety Institute.



Key:

- | | |
|------------------------|----------------------|
| 1. Incorrect procedure | 4. Planned procedure |
| 2. Cooler | 5. No flow |
| 3. Damage | |

[Text of caption to above graph] At the time of the rupture to the pipe the power plant was operating under conditions of normal production and the water should have been conducted only through the cooler in accordance with

the planned procedure. The damage occurred when the water was incorrectly conducted through the cooler as well as the by-pass route. This resulted in excessive thermal fluctuation, which put a stress on the pipe, caused fractures in it, and finally caused it to rupture.

10576

CSO: 5100

LEAK DELAYS FUELING OF OLKILUOTO REACTOR

Helsinki HELSINGIN SANOMAT in Finnish 15 Aug 79 p 11

[Article: "Leak Delays Operation of First Unit at Olkiluoto"]

[Text] A leak, which has resulted in the leaking of sea water used for cooling into the oil system, has been confirmed in the oil system of the first nuclear power unit of Teollisuuden Voima (TVO) [Industrial Power] at Olkiluoto.

Because of this leak, the release of the nuclear power plant and its commercial operation will be postponed by more than 2 months. According to the original plan the release of the power plant was to occur already at the beginning of July. It is now estimated that the power plant will not be put into operation until September, and it will not be released until a month later.

According to Information Chief Taina Salonen, the leak confirmed in the oil system to TVO's Olkiluoto Plant is "slight", and water has been found from the oil "particularly when the plant was standing idle". "The oil has now been changed and the defective system has been repaired," states Salonen.

During the stoppage that began in July the generator rotor of the turbine was exchanged for the rotor originally made for the second unit, which underwent small structural changes last winter.

Sea water is used in the nuclear power plant as a coolant, and because of the leak in the oil system, sea water has become mixed with the oil. According to Salonen the amount of sea water is, however, so slight that it is not possible to talk about a danger of corrosion. In any event the gaskets must be replaced and the oil must be changed.

On the part of TVO it is emphasized that these leaks which have postponed operations of the first unit of the nuclear power plants have occurred in so-called conventional power plants. "This has nothing to do with the nuclear aspect of it. Similar leaks could appear in any kind of power plant."

Defects in the valves, which close prematurely, were confirmed last winter in the reactor building of the Olkiluoto Nuclear Power Plant. They were installed incorrectly, and according to Information Chief Salonen they were "too sensitive". The defect was corrected by making changes in the structure of the valves.

The last large components, the 400-ton generator, of the second unit of TVO's second nuclear power plant unit at Olkiluoto arrived Tuesday night from Sweden. It will soon be put in place in the 15-meter high turbine hall.

The job of the generator is to change the energy created in the steam turbines into electricity. The electricity from the generator will be transferred to a transformer and then into the national network by means of 400 kilowatt power lines.

Welded to special pontoons the stator was transported by sea from Vasterasist, Sweden. The route taken was through the Sodertalje Channel to the Baltic Sea and the Ahvenanmaa Archipelago, and then from there to the islands of Turku and Olkiluoto. Good weather made the towing of the stator easier.

As opposed to the first unit of TVO the second nuclear power plant of TVO being constructed at Olkiluoto is being completed several weeks ahead of schedule. The construction work on the second unit has gone forward without delays and installations have arrived within the due dates.

10576
CSO: 5100

OPERATION OF SECOND LOVIISA REACTOR ENCOUNTERS FURTHER DELAYS

Helsinki HELSINGIN SANOMAT in Finnish 13 Aug 79 p 20

[Article: "Expensive Idle Time at Nuclear Power Plants"]

[Text] The defects in nuclear power plants are becoming expensive for the power companies. The companies do not want to give anymore precise information about the extent of the loss caused by the idleness of nuclear power plants, but according to Kalervo Nurminäki, project chief of Loviisa II, they are, however, considerable.

The second power plant of Imatra Power at Loviisa has not been put into operation since there are defects in its pressure plate. The first power plant of Teollisuuden Voima [Industrial Power] at Olkiluoto has been operating at only half of its capacity since the beginning of the year. Repair work on defects in the turbines has most recently brought operations to a halt since the middle of July.

The stoppage of these plants is becoming expensive since this makes it necessary to use expensive Polish coal instead of the more advantageous nuclear energy. The losses sustained are also increased by the method of production and as interest losses in addition to the cost of imported fuel. The expenditures of Loviisa II have been calculated at approximately 1 billion markkas and the combined expenditures of the two power plants at Olkiluoto have been calculated to be 4 billion markkas. The second power plant at Olkiluoto is scheduled to be completed in the fall.

There have been stoppages of the second power plant of Teollisuuden Voima at Olkiluoto since Easter. Because of damage to a generator which occurred at a similar power plant in Barseback, TVO [Industrial Power] 1st generator was inspected. The inspection took a month. In the meantime the plant operated for a month and since the middle of July there has been repair work on defects in the motor. Impurities, which are now being studied, have also been found in the reactor.

Imatra Power Awaiting Explanations from the Soviet Union

At Imatra Power they are currently waiting for clarifications, on the basis of which permission can be given for the loading of power plant II. Current prospects indicate that the operation of the plant will be postponed until late fall.

It is hoped that the clarifications coming from the Soviet Union will provide new information on the slag closures observed on the inside surface of the pressure plate. The slag closures are in the corrosion layers of an average thickness of 9 millimeters on the pressure plate.

Defects were already observed in February of last year by the ultrasonic measurements conducted by the Finns at the Izhora Plant in Leningrad.

However, the board of directors of Imatra Power decided that the much delayed pressure plate could be moved to Loviisa.

During the hot tests conducted at Loviisa fractures caused by the slag closures were observed in the walls of the pressure plate. Under severe changes in pressure it is feared that the possibility of a tear in the lining of the inner surface would extend to the actual wall.

"They are optimistic that these defects in the surface of the sheathing of the pressure plate will not affect safety," states Tapio Eurola, director of the reactor safety division of the Institute of Radiation Safety.

"Naturally, it would be better if there were no slag closures. Slag closures are also difficult to repair. Repair work can cause tensions and worsen the situation. The obtainment of a new pressure plate for its part would take 2-3 years."

Minor Changes Made at Loviisa

The nuclear power plant at Loviisa is in the final stages of confirmation for operation, in which the safety of the plant is being examined and confirmed in light of the events at Harrisburg.

"It is doubtful that there will be any decisive changes at Loviisa," states Licentiate in Technology Bjarne Regnell of Imatra Power. "Minor changes have already been made on the basis of the experiences at Harrisburg. A reduction of the pressure level of the emergency turnoffs is more essential."

The possibility that the safety valve would have to be opened unnecessarily would be reduced by reducing the pressure level. A defect in the safety valve caused the accident in Harrisburg. Because of differences in the plant at Loviisa, the safety valve does not serve the same purpose.

The installation of a simulator is also connected with the confirmation operation in connection with the power plant at Loviisa. With the aid of a computer the operation of the nuclear power plant can be imitated by the simulator. Approximately 50 people are being trained in Loviisa for operating this equipment, which costs 25-30 million markkas. "In Harrisburg it was confirmed that the operations personnel had made more than 30 mistakes," states Bjarne Regnell in emphasizing the importance of this training.

10576

CSO: 5100

NUCLEAR MISHAPS AT MURUROA DESCRIBED

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 16 Aug 79 p 8

[Article by Thankmar von Muenchhausen: "Suddenly a Mini-Springtide; Mishaps in Connection with the French Nuclear Tests in the Pacific"]

[Text] Papeete (August) — Half a company of journalists accompanies President Giscard d'Estaing to the French overseas territories in the Pacific. For the last phase of the trip, however, the company of the press is not wanted: Mururoa Atoll, where France has since 1966 been testing its atomic weapons, its "force de frappe." What is taking place there, in the southeastern corner of French Polynesia, is being kept a strict military secret by the Ministry of Defense.

On 2 July 1966, the first French atomic bomb was exploded over Mururoa. By 1974, 40 more atomic charges had been exploded in the atmosphere, including 3 hydrogen bombs. In 1975, France took into account the protests of her neighbors in the Pacific and switched to underground tests.

Approximately 1,500 persons -- scientists, technicians, workers, soldiers, and sailors are steadily employed at the test site. The area consists of the Mururoa and Fangatofa atolls, where the explosions are carried out, and the base island of Hoa, where airplanes can land and where the bombs that come from France via the West Indies and Tahiti are assembled. Most of the men stay at the test site for 3 months. Then they go back to Tahiti, situated 1,500 kilometers from there, or to France. Double pay recompenses the men for the monotony of the service and for the risk involved.

No matter how thorough the screening process, it is impossible to avoid indiscretions entirely. Even during the president's visit one could hear rumors in Papeete, the capital of Tahiti, that shortly before the visit an accident had occurred on Mururoa in which two people were killed and a number of persons injured. Somewhat later, the Commissariat for Atomic Energy (CEA) reported that on 6 July two technical employees had been killed as a result of a "non-nuclear explosion." The daily LE MATIN DE PARIS not long ago carried a detailed description of this accident. Its report said that the explosion was indeed a "non-nuclear" one, but that its consequences unfortunately were not. A plutonium charge had been exploded in a bunker on Mururoa.

The purpose of the test was to measure pressure waves. After a test of this type, the air in the bunker is driven by powerful ventilators against an acetone-saturated paper diaphragm, on which the plutonium particles are precipitated. Then, workers dressed in protective clothing enter the room in order to get rid of the remaining radiation.

On 6 July, according to the atomic authorities, residual acetone vapors had remained in the bunker and had exploded. One worker was killed on the spot, another suffered injuries to which he succumbed a little later, and four additional workers suffered burns. The injured were transported via special plane to the military hospital in Clamart, in the vicinity of Paris. Another special plane brought 40 specialists from France to Mururoa in order to "deradiate" the atoll thoroughly.

According to LE MATIN, another accident occurred on Mururoa on 25 July, several days after the president's visit. This time the mishap occurred in connection with one of the big nuclear tests. The underground atomic explosion takes place in a heavily reinforced concrete chamber at the foot of an 800-meter shaft. The shaft is sunk in the shallow lagoon of the atoll--similar to an off-coast oil drilling operation--and goes right into the basalt floor under the sea. An oblique tunnel connects the explosion chamber with a similarly subterranean room in which the measurements are taken.

LE MATIN DE PARIS claims that, on the occasion of the last test, the atomic explosive charge had gotten stuck in the shaft. The explosion therefore had to be set off in the shaft, and not in the heavily secured chamber in the ocean floor. The paper said that the pressure waves caused a "mini spring-tide" which spilled over the road along the shore of the atoll and injured two persons.

An atomic commissariat spokesman in Paris did not deny the spring-tide on the day in question, but referred to its having been connected with a miscarried atomic explosion as a "fantasy." On the other hand, the CEA deputy for safety, who had investigated the two accidents, made the following concession: "It does indeed happen that the explosion of a bomb creates strong waves." As is customary in such cases, the Defense Ministry enveloped itself in silence. The French press paid no attention to this event.

The fact that an atomic explosion--and not just an ordinary one--occurred on Mururoa on 25 July has also been confirmed from another quarter. New Zealand reported a reading of 6.3 on the Richter scale--the strongest explosion since the beginning of the underground tests in 1975. The People's Republic of China, which had also registered the explosion, contributed the additional information that this had been the eighth French atomic test in that year. Peking only welcomes it if France increases its deterrent power vis-a-vis the Soviet Union.

The CFDT labor union is worried about the safety of the workers in the testing area: "The work carried out under time pressures, the disregard of all possible risks, the desire to push ahead ever more rapidly and to lower

costs are the most important causes for the steady deterioration of working conditions and the increased number of accidents." The radical leftist party (MRG) is demanding the establishment of a parliamentary investigative committee in order to obtain greater clarity concerning the atomic tests.

A higher degree of clarity has for years also been demanded by the antagonists and critics of atomic tests in French Polynesia, headed above all by Swedish anthropologist Bengt Danielsson, a former colleague of Thor Heyerdahl and author of the book "Mururoa Mon Amour," who has been living in Tahiti for the past quarter of a century. In an open letter to the president on the occasion of his visit to the South Seas, Danielsson and his friends expressed their desire to know the basis on which the French government had given its assurance that the atomic tests caused no harmful effects for the population of Polynesia. They wrote as follows: "Those responsible for these tests, the Pacific Test Center (CEP) and the Commissariat for Atomic Energy (CEA), have for a period of about 10 years been publishing occasional appeasing bulletins which were based on their own investigations. For the past 3 years there has been no sign of life from the Laboratory for Radiation Biology, whose only determinable tasks consisted in preparing such statements." The atomic test foes have been made even more suspicious by the example of the inhabitants of Bikini Atoll used for American atomic tests, who in 1974 were permitted to return to their island with great propaganda fanfare, only to be evacuated again less than 4 years later because of the danger of radiation.

The worry about radioactive fallout in the tepid waters of the South Seas, and about radiation-contaminated marine flora and fauna, is providing a stimulus for the marginal efforts to achieve independence in French Polynesia. However, most Polynesians--and this includes not only those engaged in business--appreciate the fact that the nuclear testing has brought a great deal of money and the blessings of the consumer society to this remote island world. No unequivocal answer can be obtained to the question of how long France intends to continue the atomic tests. Last year Chief of the General Staff Mery made the following statement in Tahiti: "At the present time we are developing multiple warheads which will give us a capacity comparable to that of the Russians and the Americans. What is required for this purpose is a series of tests which explain the importance of this test area." It will probably take some more years before the French have caught up with the Russians and the Americans. In the meantime, France will be expanding its atomic installations in the Pacific.

8272

CSO: 3103

END

END OF

FICHE

DATE FILMED

OCT 5, 1979

Jones